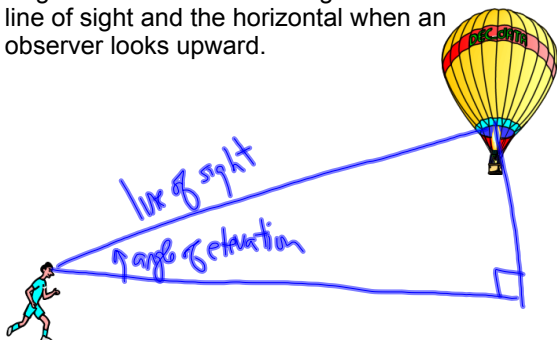
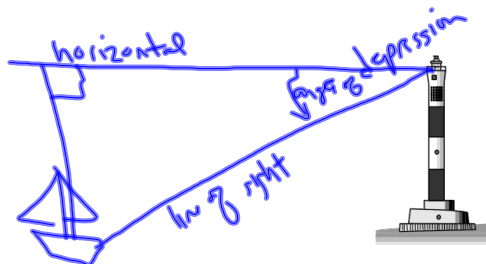


## 7-5 Angles of Elevation and Depression

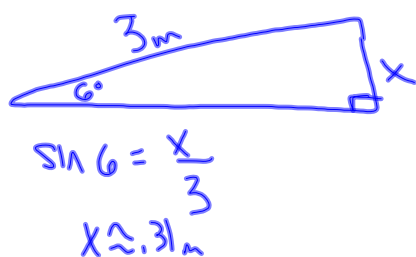
Angle of elevation--is the angle between the line of sight and the horizontal when an observer looks upward.



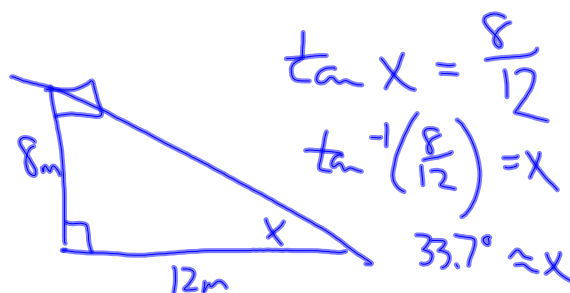
Angle of depression--is the angle between the line of sight and the horizontal when an observer looks downward.



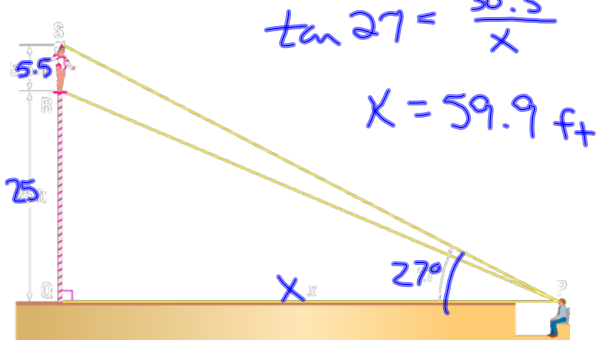
A wheelchair ramp is 3m long and inclines at  $6^\circ$ . What is the height of the ramp?



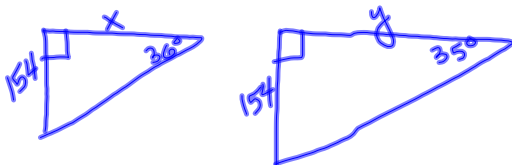
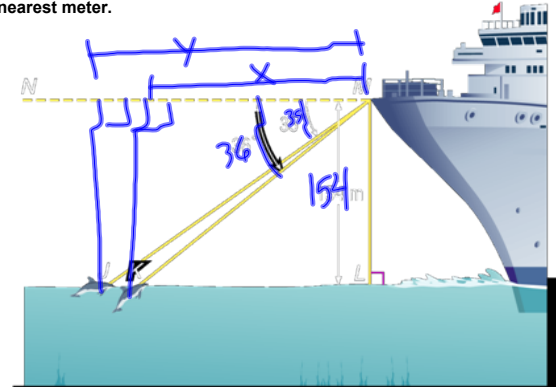
What is the angle of elevation for the sun when a 8m flagpole casts a shadow of 12m?



**CIRCUS ACTS** At the circus, a person in the audience watches the high-wire routine. A 5-foot-6-inch tall acrobat is standing on a platform that is 25 feet off the ground. How far is the audience member from the base of the platform, if the angle of elevation from the audience member's line of sight to the top of the acrobat is  $27^\circ$ ?



Vernon is on the top deck of a cruise ship and observes two dolphins following each other directly away from the ship in a straight line. Vernon's position is 154 meters above sea level, and the angles of depression to the two dolphins are  $35^\circ$  and  $36^\circ$ . Find the distance between the two dolphins to the nearest meter.



$$\tan 36 = \frac{154}{x}$$

$$x \approx 212.0$$

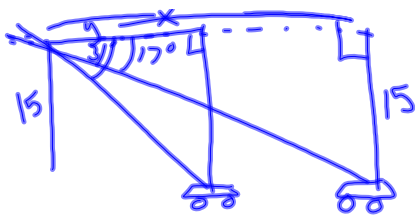
$$\tan 35 = \frac{154}{y}$$

$$y = 219.9$$

Handwritten calculation for the distance between dolphins:

$$219.9 - 212.0 = 7.9 \text{ m}$$

Maura looks out her second-floor window, which is 15 feet above the ground. She observes two parked cars. One car is parked along the curb directly in front of her window, and the other car is parked directly across the street from the first car. The angles of depression of Maura's line of sight to the cars are  $17^\circ$  and  $31^\circ$ . Find the distance between the two cars.



$$\tan 17 = \frac{15}{x} \quad \tan 31 = \frac{15}{y}$$

$$x = 49.1 \quad y = 25.0$$

$$49.1 - 25 = 24.1 \text{ ft}$$